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ABSTRACT

Magnet schools are district-wide, open-enrollment institutions that are thematically organized around such subject areas as science and mathematics, the performing arts, or career areas such as engineering. They are largely non-selective; that is, students who apply are evaluated primarily on the basis of their interests and motivation rather than their academic record or test scores. The first such school in this country was Boston Latin, founded in 1635; several others founded later are also well-known. Originally designed to serve the needs of a small intellectual elite, magnet schools now have the twin focus of improving educational quality while increasing racial integration. They also provide a setting for teacher-generated reform initiatives. In 1981-82 there were 1,018 elementary and secondary magnet schools in the United States. Continuing research and analysis to increase our knowledge base about long-term effects of magnet schools should be supported by the Federal government. Furthermore, the Federal government should support a large scale magnet school demonstration program of three magnets for each standard metropolitan statistical area, plus several additional magnets per State based on population; this plan would more than double the existing number of magnets and lay the foundation for long-term incremental change. (CJM)

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MAGNET SCHOOLS

By: Denis P. Doyle and Marsha Levine

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Washington, D.C.

Magnet Schools

by

Denis P. Doyle
and
Marsha Levine

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None of the opinions contained herein should be construed as reflecting the views of anyone other than the authors.

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On the occasion of the American Enterprise Institute's fortieth anniversary and seventh annual Public Policy Week, the AEI Education Policy Studies Program initiates a series of Occasional Papers in Education.

Included are papers prepared by AEI staff and consultants, as well as other papers identified by AEI's Education Policy Studies Program as being of special interest to the education community.

--Denis P. Doyle
Director, Education Policy Studies

ABSTRACT

Although there is a long history of highly selective magnet schools in the United States, their modern incarnation is relatively new and highly successful. This essay begins with a description of the history and changes in magnet schools, beginning with those schools created to serve the needs of a small, intellectual elite to today's magnets with the twin focus of increasing school integration and improving education quality.

The essay goes on to describe the schools as we know them today based on the most recent research findings. Today's magnets include district-wide open-enrollment institutions, thematically organized, which are largely non-selective--that is, as that term is ordinarily understood. They do not simply cream "gifted" students, they attract students who are motivated and interested in the focused program the magnet offers.

On balance, modern magnet schools achieve their objectives with a high degree of success: they increase the degree of racial integration and improve the racial climate. Indeed, the level of improvement is frequently so high that magnet schools may turn their attention to matters of pedagogy and instruction. In addition, morale is higher, discipline problems less, and student outcomes higher. The evidence for these findings is limited but powerful. The major work in the field is at present underway, but portions of it are now available. This paper summarizes and highlights the information and findings currently available. The final report should be released in completed form by the fall. (The research is being carried forward by

James Lowry and Associates and their subcontractor, the Abt Corporation, under the terms of a Department of Education contract.)

On the strength of these findings we conclude that magnet schools are an important strategy for school reform and suggest two roles for the federal government. First, continuing research and analysis should be supported to increase our knowledge base about long-term effects of magnet schools. Second, we now know enough about magnet schools to build a major and lasting reform strategy around them. We propose combining the educational effectiveness of magnet schools with the land grant college model, a proven strategy for innovation, education, and local capacity building, initiated through the leadership of the federal government.

Specifically, we propose that the federal government build on its historic record of accomplishment as a facilitator of a multi-purpose enterprise for research, education, innovation, and dissemination, i.e., the land grant college system, and initiate a similar program for magnet schools across the nation. It is a strategy of excellence in education which rests on the sound educational premises of student and teacher motivation combined with a decentralized system of implementation which encourages all levels of government, the private sector, and postsecondary institutions to each play appropriate roles in contributing to education improvement.

We conclude by proposing that the federal government support a large-scale magnet school demonstration program of three magnets for each standard metropolitan statistical area, and several additional magnets per state based on population. This would more than double the existing number of magnets (from little more than 1000 to 2000-plus) and would lay the foundation for long-term, incremental change.

INTRODUCTION

As their name implies, "magnet" schools are an education lode stone, designed to attract students (and faculty) on the basis of their special qualities. The key characteristics that define magnet schools are voluntary enrollment and thematic organization: magnet schools are found in the public and private sector, at the elementary and secondary level, they are academic and non-academic, selective and non-selective. Typically, they are organized by pedagogical theme, science and math, music and art, or the humanities, for example. Their diversity is itself an identifying factor. These characteristics--voluntary enrollment and diversity--run counter to the major forces which have shaped public schooling. They are, however, the exception that proves the rule.[1]

For generations two major forces shaped America's public schools: first was place of residence. For generations, it determined where one went to school. Indeed, in American education, geography was destiny. Second was the continuing search for "one best system" to educate all children. These interlocking ideas produced a common school culture in which most public schools were surprisingly similar.

THE QUEST FOR THE BEST

Student characteristics--high motivation, intellectual or artistic interests and capabilities-- have had little bearing on the kind of school a child attended. The underlying reason for neighborhood assignment, of course, was not pedagogical: it emerged organically for reasons of administrative convenience. As neighborhoods appeared, schools sprang up to serve them: what began as a simple

administrative expedient has become an issue which fuels heated debate, but it is clear in terms of the historical record that neighborhood assignment had no pedagogical theory to dignify it.

American schools--public and private--exhibit nearly identical organizational and pedagogical arrangements because they spring from a common culture of schooling. They are the product of a shared vision of how schooling should be organized and operated. The principal difference between schools lies on a qualitative scale: a fast-track academic private school expects more of students, but is still organized in much the same way as its public analogue. Both have days divided into periods in which teachers lecture and students respond; both assign letter grades; both group children by age rather than demonstrated or intrinsic ability; both offer courses of study for fixed time periods, usually semesters, rather than the time needed to master the material. This common approach to the common school is the product of a conviction that "one best system" could be designed.

Captured best in David Tyack's fine book of the same title, it reflects America's "can do", pragmatic spirit.[2] Following the lead of the scientific management revolution, American schools began to look like neat little factories, with students the product, teachers the workers, administrators the management, the Superintendent the CEO, and the School Committee the board of trustees. And as the production line worked for business, it worked for the school. To only slightly oversimplify, it was because of this that most American schools began to look each like the other. As a consequence, it made little difference in which school a child enrolled: they were all very nearly the same. What had begun as an accident of geography and

administrative convenience, then, became a virtue: it was "good" for children to attend neighborhood schools.

Its logical culmination was James Bryant Conant's comprehensive high school, the subject of his important work, The American High School Today, published in 1959.[3] American education accepted Conant's proposals with a vengeance, and the pressures for uniformity in schooling increased.

It is precisely the limitations of the comprehensive high school, however, that ushered in the modern wave of magnet schools.

The limitations of the comprehensive neighborhood high school are several. Frequently, they reflect the residential patterns of racial isolation characteristic of much on the nation's urban areas, and the schools were themselves predominantly of one race. From a pedagogical standpoint, the broad curriculum of the comprehensive high schools lacked the depth of more sharply focused schools. The fact that assignment was "involuntary" tended to undermine the morale of teachers and taught.

Conceptually, it was no great leap to magnet schools: organized around an academic or vocational theme, stressing voluntary participation, magnet schools held the promise of racial integration, higher morale, more focused study, and higher student outcomes, which is to say, higher performance as measured by tests. In particular, magnet schools looked like a powerful strategy to encourage voluntary desegregation.

EARLY MAGNET SCHOOLS

Although neighborhood schools have been the norm in American education for decades, there is a modest but distinctive history of non-neighborhood schools, principally fast-track academic or specialized vocational schools that draw on the population of the whole school district. Not known as magnet schools when they were created, they nevertheless fit the definition. The most well-known are a sort of honor roll of American education: first and oldest is Boston Latin, founded in 1635, a year before Harvard University. In addition are schools known to educators throughout the country: Lowell in San Francisco, Central High in Philadelphia, Bronx Science in New York, Aviation in Queens, Lane Tech in Chicago, Performing Arts in Manhattan.[4]

Indeed, magnet schools represent a striking break with the tradition of neighborhood assignment. Their selectivity, diversity and voluntarism run at cross purposes to comprehensive school and neighborhood attendance orthodoxy. Yet the selective magnet school model has managed to survive and the concept has been developed into a contemporary variation with the dual purposes of quality education and integration. In both their original and hybrid forms, they are the subject of intense interest.

But their history has been checkered. Frequently accused of elitism, selective magnet schools have on occasion had to fight for their lives. Like flies in amber, New York City's three selective academic high schools, for example, found it necessary to get special legislation enacted to preserve themselves in statute. The

legislation is no small matter: it does not just solemnize their existence but protects them from bureaucratic intervention and even dissolution.

Indeed, not all selective schools have been so fortunate. A bleak fate befell Dunbar High School in Washington, D.C. in the mid-1950s.[5] Dunbar was widely viewed as the nation's premier black public high school. Founded in 1870, Dunbar is described by Fred Hechinger of the New York Times as "the first public high school for blacks in the U.S. operating on the principle of selectivity and quality. The quality of its students and faculty was matched by few contemporary public schools."[6]

In spite of the limitations imposed on it by a society that employed the oxymoron "separate but equal", Dunbar flourished. It was an island of excellence, high standards, and a source of pride to generations of graduates, teachers, and friends. It was a magnet school of the day, drawing able black children from all over the city: and a number of children who were not D.C. residents in the full, legal sense, moved in with friends or relatives to attend Dunbar.

Hechinger notes that "among Dunbar's illustrious alumni were Benjamin O. Davis, the first black general in the United States Army; Dr. Charles Drew, who devised the method of storing blood plasma and set up the first blood bank for the American Red Cross; and former Housing Secretary Robert Weaver, the first black cabinet official."[7] In a great historic irony, the D.C. School Board converted Dunbar into a neighborhood high school as a response to Brown v. Board of Education. This spelled the end of fast-track public education in Washington, D.C. for both black and white students, and it has only

been in the past few years that magnet schools have reappeared in Washington, albeit in attenuated form.

ELITISM The charge of elitism has plagued selective schools, and by extension magnet schools generally. Basically, the refrain is sung on two notes: the first is that separation of children by ability is intrinsically wrong, it is undemocratic. The second is a more conventional and more frequently heard instrumental argument: schools that enroll the brightest children deny them to the rest of the system, plunging the remaining schools into a morass of mediocrity. There is, of course, virtually no empirical work in this field for the twin reasons that it is difficult to do methodologically, and no funding agency has thought to do it. But there is some theoretical work.

The most powerful is a short, elegant book by Albert O. Hirschman, titled Exit, Voice and Loyalty.[8] He argues that the quality-conscious consumer will not tolerate the inferior product of public monopolies. Although Hirschman's point of departure is the state-owned railroads of a West African country, he extends the analogy to public and private schools. Just as the quality conscious parent cannot tolerate low quality public schools, neither can the public monopoly tolerate the continuing complaints of a small but vocal group that cares about quality. Both make life miserable for the other. As a consequence, each side reaches an uneasy truce in which the quality-conscious consumer is permitted to take advantage of a high-quality option. In the West African case, the alternative is privately owned trucks which compete directly with the state railroad monopoly. Customers like the quality--on-time service--and the state

monopoly is greatly relieved to be done with the complaints of the quality-conscious: for this reason they tolerate the private competition.

In the case of education, parents who care enough find an alternate provider, private schools that charge fees, "better" suburban schools, or public magnet schools.

This theory provides a powerful explanation for the existence of private schools generally and the continued existence of selective public schools in a few major cities: New York, Boston, Philadelphia, San Francisco. A sort of grudging modus vivendi emerges, because the school system realizes that the selective schools serve an important but limited function, satisfying the small number of vocal, quality-conscious consumers.

The political tension revealed in this situation is tangible: it goes to the heart of a long and honorable American tradition of emphasis on equality and antipathy toward privilege. But it also reflects a fundamental view of education which is seriously flawed. And that is the idea that for every winner there is a loser, for every good school a bad one. It is the logical if wrongheaded extension of the idea that there is "one best system" of education; it is deeply ingrained in American life. If there is only "one best system" to educate children, then the assumed bell-shaped curve of intellectual ability means that when the brightest children are "creamed" and put in a selective school, the rest of the system suffers. Although the argument is not supported by evidence, its "face validity" is strong and deserves a response.

First, it is built on erroneous assumptions about what makes a good school. As we know from the private market, which includes an array as diverse as Quaker schools and military academies, Waldorf schools and Jesuit schools, international baccalaureate schools, and A.S. Neil Summerhill schools, there is no one best system of education.

That this is so is revealed with equally great power in New York City's selective public schools. The three academic schools already mentioned--Stuyvesant, Bronx Science, and Brooklyn Tech--compete with each other and with Music and Art, Performing Arts, and Aviation, which are equally selective. Together they represent an extraordinary range of diversity and choice. (They also compete with private schools, head to head. It is one of the few "markets" of its kind in America.)

As compared to each other, the differences they represent are not differences in intellectual ability but different pedagogical interests, a different way of interacting with the world.

These schools also reveal that good education for one student and one teacher may vary greatly from what other students and teachers need. Indeed, does anyone's experience suggest otherwise?

To treat the concept of magnet schools as synonomous with selective schools, however, is both politically and pedagogically limiting. Politically limiting because it raises the question of elitism unnecessarily, and pedagogically limiting because it makes too much of selectivity. Indeed, except in extreme cases, rational selectivity is difficult to implement. Take the case of New York's three academically selective high schools. As many as fifteen thousand children

take the entry examinations each year for approximately two thousand, five hundred openings (nearly one million children attend New York City public schools).

Only the highest-scoring students are permitted to attend the three schools: but what of the next two thousand, five hundred, and the next? The few points on entry examinations that separate the top from the runners-up cannot really measure difference in intellectual ability. The obvious solution is to add additional special schools so the runners up will have a choice as well. And this is precisely what is beginning to happen.

THE NEW WORLD GRAMMAR SCHOOL

The selective schools described so far grew organically from the British grammar school model, a program of fast-track, college preparatory education. They are elite schools for elite students. Indeed, unlike the American comprehensive school, the grammar school is characteristic of education throughout the world. Each of the advanced industrialized nations--free and totalitarian--as well as almost all less developed countries employ elite models of education. In France, China, Russia, and Uganda, entry to each higher level of schooling is secured by passage of progressively more rigorous examinations. These elite systems, however, are not solely the product of a national passion for high quality. To the contrary, they reflect a hard-headed decision to sharply ration education by objective means. Because only a limited number of seats in first rate schools are available, only the highest scorers are permitted to enroll. Recent student riots in France occurred precisely because the government

decided to reduce the number of seats available and to ration them by even more rigorous examinations.

The American genius has been to create genuine mass education in which access is assured to all, across the board, in ways that leave most foreign visitors amazed. (It is equally amazing to them that we have any education standards at all, one might add.) For all the problems with American education, the accomplishment of mass education is one of which the country should be justifiably proud.

The dichotomy between the American and foreign models has led to an unfortunate view of education as a "binary" enterprise, either elitist or egalitarian. At one end of the scale is the English grammar school, at the other the comprehensive American high school. One is open to the best and brightest, the other open to all. One is democratic, the other aristocratic.

Interestingly, at the level of higher education there exists a hybrid, and it is an American invention. It combines high standards with broad, open access. In its first incarnation it was the land grant college. Open to all, many were unable to meet the demands placed upon them after they enrolled. The personal and institutional price was a high rate of attrition. Today, the most distinguished system of higher education in the world--California's--is self-consciously designed to simultaneously satisfy equity and quality interests. Any Californian with a high school diploma (or who is age 18) may enroll in the third tier of the state's three-tiered system, the community colleges. Better prepared students may go directly to the State University system; and the very best students may enroll in the

University of California system. Movement among segments is encouraged and frequently occurs.

CONTEMPORARY MAGNET SCHOOLS

Magnet schools, then, can be designed to retain open access as they build on the crucial intangible of education motivation. They can be built around a philosophy of inclusion rather than exclusion, open to any student who cares to attend. In such a setting, the likelihood of school success is substantial. No longer unwilling victims of schooling, in magnet schools students become willing and eager participants.

Magnet schools offer other possibilities as well. Choice is a virtue, not alone because of different learning styles, but because different people have different things to learn. Thus, music and art magnets, vocational magnets, humanities magnets, as well as science and math magnets make pedagogical as well as social sense.

As well, magnets exhibit an ambience or ethos which has a powerful effect on personal behavior. Just as additional homework may be expected, so may standards of dress and behavior. A magnet school may require community service as a condition of graduation where such requirements would be intrusive and onerous if expected of all students in a given school district.

Of equal importance, magnet schools offer a setting in which teacher-generated reform initiatives may take place. Imagine, for a moment, the implementation of the Carnegie-sponsored reform study being directed by Ted Sizer, former Dean of the Harvard Graduate School of Education. Reported in the June Phi Delta Kappan, Sizer proposes, among other things, an end to age grouping of students and

the wholesale adoption of ability/achievement grouping, in which students would assemble on the basis of what they know, not how old they are.[9]

As interesting as Sizer's idea is, how might it be implemented? Should a state board of education impose it by fiat? Should the federal government support demonstration projects? Should a court order it (or forbid it)? Clearly, the most intelligent and humane way to implement such an idea is for a caring and interested community to take it upon itself to try it. This is precisely the kind of opportunity magnet schools present. Composed of a community of scholars, they should be encouraged to pursue their lights as they see them.

The reasons for creating magnet schools vary greatly as well; in many communities they have been designed to facilitate racial integration, in some to provide special instruction for gifted and talented students, in others to offer vocational training in a cost-effective manner. As well, they reflect the special resource of their host communities. New York's Performing Arts schools is on 46th Street near 6th Avenue, hard by the theater district. Its new forty-five million dollar campus, which opens in September 1984, will combine Music and Art with Performing Arts in one building, kitty-corner from Juilliard, across from the New York Library of Music, behind Lincoln Center. Similarly, Houston's School of Engineering Professions reflects Houston's stake in a high-tech future.

The wide variety of magnet schools now in operation is revealed in selected, thumbnail sketches:

o The Houston High School for the Performing and Visual Arts maintains high academic standards;

o Aviation High in Queens prepares students for technical careers in aviation. Its best students simultaneously earn Regents diplomas (New York State's coveted academic diploma) and FAA certification in airframe and/or power plant maintenance. Graduates go on to employment, the military, and higher education.

o The Philadelphia High School for International Affairs began in 1981 to "continue...voluntary desegregation" through the introduction of magnet schools. Jointly sponsored by the World Affairs Council of Philadelphia and the Philadelphia School District, it is racially balanced, offers a full curriculum including four years of the same foreign language and a concentration in both basic business skills and global studies.

o Baylor College of Medicine and the Houston Independent School District jointly sponsor the High School for the Health Professions. Eleven years old, approximately ninety percent of its graduates go on to college and pursue a health-related field. Half the graduates are minority group members.

Even a cursory review of magnet schools reveals differences as important as the similarity the nomenclature "magnet" implies: they are different schools for different purposes. They serve different students and reflect different community resources and interests.

	ESSA-funded		All Magnets	
Magnet Grade Level	no.	%	no.	%
Elementary	158	62	601	59
Middle/Junior	39	14	173	17
Senior High	62	24	244	24
TOTAL	259	100%	1019	100%

Magnet typologies are not well developed because the phenomenon is relatively new, and the subject has not been the object of sustained research. The few that do exist are obvious: academically selective or non-selective (or selective by audition or other appropriate device). As is clear from the table above they may also be distributed by grade level, and source of funding. (ESAA refers to Emergency School Assistance Act; see appendix.) In addition, they may be arranged by theme. To date the following themes have been identified: Basic Skills, Fundamental, Bilingual, Montessori, Vocational or Career, Arts, Music, Performing Arts, Science, Mathematics (or both), Humanities or Social Sciences, Health Careers, Academic, Business, and Computer. Clearly, the only limit on thematic organization is the human imagination.

As we have suggested, research in this field is new but the preliminary findings are striking. The most important research is being conducted by James H. Lowry and Associates and their subcontractor, the Abt Corporation, under the terms of a U.S. Department of

Although the philosophy and purposes of magnet schools can be enumerated, much of what we know about them is anecdotal and idiosyncratic, the result of personal access to information. Magnets have been the subject of only limited, systematic study in their own right. In part, this reflects their relative scarcity; until recently there were not many magnets to study. In part, it reflects the contemporary culture: there was little interest in magnets because they were schools that ran against the grain.

Fortunately the research hiatus is over. Policy makers are no longer reduced to anecdote and myth, common sense and prejudice, a combination designed to frustrate informed decision making.

There is an emerging body of evidence about non-selective magnet schools, and it is of substantial interest.

THE EVIDENCE The preceding narrative has sketched in the history and underlying philosophy of magnet schools, but having described magnet schools in a general way, what is it we know about them? With what degree of confidence may we make assertions?[10]

First, there are the numbers and a preliminary typology. The best and probably most accurate count of magnet schools indicates that in 1981-82 there were 1,018 magnet schools in the nation. The break-down is as follows:

Education Contract. The principal researchers are Rolf Blank of Lowry, Robert Dentler, of Abt, and Catherine Baltzell of Abt.

The findings reveal what theory would predict about magnet schools: higher levels of teacher and student motivation, higher achievement, success with racial integration, significantly reduced behavior problems, greater teacher satisfaction, reasonable costs, and the like. The most welcome finding is that magnet schools are neither divisive nor elitist. Indeed, this may be the single most important finding, because the single strongest criticism of magnet schools is that they are elitist.

Before elaborating on this theme, it is useful to briefly but systematically sketch in the most important findings:

- o Magnets produce education quality by virtue of three basic changes from traditional public schools:
  - --a coordinated program based on an education "theme",
  - --improved student motivation,
  - --specialized and highly committed staff
- o Although education quality differs among magnet schools, at the top of the range magnets achieve better academically, have better attendance, and exhibit fewer behavior problems.
- o Most magnets are racially and ethnically integrated and reflect the larger population they serve. This effect is so striking and pervasive that it permits magnet schools to direct their energies to questions of education excellence, satisfied that their racial-ethnic balance is appropriate.

o Desegregation occurs voluntarily as parents and students identify special education programs that appeal to them. Thematic organization works.

o Effective magnet schools provide quality education to average as well as above average students. Indeed, they do more for average than above average students.

o The key characteristic of successful magnet schools is strong support from the Superintendent and School Board. This in turn is almost always related to strong community support.

o The evidence indicates that effective magnet schools have measurably better race relations.

o Magnet schools cost little or no more than regular schools to run, but frequently have high, one-time, start-up costs.

o Magnet schools frequently have strong linkages to other community resources--universities, business, hospitals, theaters, and the like. Thematic organization increases the likelihood of fruitful collaboration.

o Magnet schools are frequently much smaller than regular schools. While the research findings in this area are not conclusive, one hypothesis certainly warrants serious study: Many regular schools may have reached the point of significant diseconomies of scale.

o The location of magnet schools is unimportant: they succeed equally in "good" and "bad" neighborhoods, so long as they deliver on their promises.

o Transportation to magnet schools can be expensive and cumbersome. Insofar as it is, it becomes a proxy for community and student commitment.

o Magnet schools, properly organized, can be a powerful tool for desegregation, so powerful that schools may quickly turn their attention to education. They are a tool of tremendous strategic utility.

o The creation, organization, and management of magnet schools is widely understood and well within the administrative capabilities of most school districts.

o Magnet schools reflect a community's unique resources and capabilities, as well as needs.

In a more general vein, several other observations are in order. First, magnet schools change student and teacher behavior and attitude. Commitment is the key, and in this respect magnet schools begin to look like independent schools.

Second, the voluntary association of students and teachers produces powerful education dynamics. Even in non-selective magnet schools the ordinary student--by voluntarily enrolling--is committed to extra effort. The willingness to work translates into more work of higher quality. In the jargon of social science research, there is a "black box" effect. The school makes a difference. There is "value added". The student learns more than he or she would otherwise.

It also legitimizes school demands. It permits the school to ask for more, of both students and their families. At the same time, it frees teachers to act professionally. No longer concerned with school discipline, the teacher can concentrate on the subject at hand.

Equally important, the student is a willing accomplice in the process. A sense of reciprocity is established.

Both the empirical evidence and anecdotes suggest one curious feature about the magnet school movement, both historically and in modern times. For reasons that remain obscure, there appears to be a naturally occurring upper limit to the number of magnet schools that a single school district will support.

In some cases the school board simply refuses to let the number increase, even if there is fairly significant parental demand (that is, oversubscribed, wait-listed schools). The reasons appear not to be clever marketing: it is not designed to keep people clamoring for magnets. Rather, the existing culture of school organization and management seems unwilling and unable to expand beyond a finite number of magnet schools. Although Houston may be moving in this direction, there is as yet no district which has adopted a strategy of one--hundred percent magnet schools. The largest number to date is Buffalo, New York, in which thirty-seven percent of the schools are magnets.

THE FUTURE

Are the successes of magnet schools explained exclusively by the concentration of bright youngsters, or, in the jargon of social science, are there "school effects"? Are the schools doing something right, or is it simply the case that no one could turn these students off? The question is hardly trivial, given the problems the rest of American education faces.[11]

Are there program characteristics in magnet schools, as distinct from the characteristics of the students? There are, and not

surprisingly they are characteristics one would expect: an orderly and humane learning environment in which much is expected of students and teachers; homework is required; absenteeism is not permitted, nor is vandalism, truancy, and general incivility; the students enjoy the respect of the faculty and the favor is returned. The principal, along English lines, is the headmaster, not an autocrat; indeed, in many magnet schools he or she still teaches on occasion, a symbolically important activity. Perhaps the single most important program dimension is intangible: students are expected to meet their responsibilities to the school and to themselves. There is the recognition that learning is by and large hard work: some of it is fun--having learned, for example, is more fun that learning--but for the most part learning requires diligence and enterprise. It is not a game, and students in magnet schools are put under real pressure to perform.

The opportunity for the school to apply such pressure is related to one aspect of selective schools that is so obvious observers frequently lose sight of it: students are not just selected "in", they are there because they want to be. They're volunteers.

Pride and satisfaction spring from genuine accomplishment, and the students in successful magnet schools are being held up to real standards. A well-executed biology experiment can't be faked; nor can a ballet solo. Advanced Placement (AP) math is a no-nonsense course, as is AP English.

Are there any lessons in this for the nation at large, particularly as it wrestles with the legacy of education failure?

The most important lesson is the most obvious: motivation no less than intelligence is randomly distributed in the population.

Every major city and region in the nation could support, staff, and operate magnet schools. Indeed, in those cities without magnet schools, the only option available to parents who care about quality education is to buy it, either in the form of private school tuitions or a house in the suburbs.[12]

Another option available to school systems is to do what New York City's new chancellor, Anthony Alvarado, did when he was regional superintendent of Spanish Harlem. He faced a unique problem--a disaster, some thought--and turned it into an opportunity. The Benjamin Franklin School, at 116th Street and the East River Drive, had fallen into academic and administrative bankruptcy: the school was a total loss. It was closed, cleaned up, and reopened as a new school, one without parallel in urban America. It was turned into an open-enrollment science-math school and offers classes for kindergarteners to seniors in high school. Alvarado found an answer to academically selective schools. What of the kids that don't pass the entry examinations to selective schools but went to the trouble to take them? By definition they are motivated and eager; as well, many are as well qualified as those who pass the examination. No academic examination is sensitive enough or reliable enough to give anyone confidence in photo finishes. The lead Alvarado offered as Regional Superintendent could be followed across the country.

Recent research by a wide variety of researchers in this country and abroad confirm what most parents, teachers, and students already know: the crucial ingredient in school success is the school "ethos". This is a handy umbrella term designed to capture the sense of purpose and reciprocal expectation schools and their communities have for each

other. When principals, teachers, students, and families have a clear sense of what their purposes are, they know what is expected of them. And they can deliver. The real power of selective schools is the same as the new non-selective math school in Spanish Harlem; it is their capacity to create a community of scholarship and shared interest, based as much on student motivation as high intelligence.

Our long history of compulsory attendance and neighborhood assignment of students has led us to believe they are eternal verities, as if they have some educational or social significance and meaning. They have neither. Both were historical accidents that bear almost no relationship to any legitimate pedagogical objective. It is worth repeating that neighborhood assignment of students grew organically out of nineteenth century common sense. When a small school district built its second school it was to serve a swelling population; and its third and fourth the same. What had been simple administrative convenience became a great American virtue. Compounded by the problems of race and the prospect of desegregation, neighborhood schools became an article of faith. But the clearly make neither administrative nor pedagogical sense today.

The wide diversity among magnet school themes makes the point in a powerful way: there is no one best school for everyone. Just as some students do well at a music and art magnet, others do well at an academic magnet. As a people, we do need some common core of shared cultural literacy, but than can be achieved in different settings by different methods. There are different ways of approaching and appropriating the common culture: different is not bad, it is just what it suggests--different. And that is surely the reality of the

modern American city: different people, with different interests and different learning styles. And different teaching styles, one might add.

The last is important because it brings us full circle to the question of schools' effects. Do they make a difference, or is the secret simply smart kids? At one level, the question is utterly bizarre. Does anyone really think that schools don't make a difference? Students don't master AP Calculus by osmosis: they do so because the course is offered, because they work at it. And so it goes with ballet, the French novel, English literature, and reading. There are precisely the things that schools do: street wise kids may learn to run numbers, but they don't learn differential equations on the corner. Indeed, for street wise kids the school is the street, the numbers boss the teacher.

The answers to the Educational Excellence report and the other reports being produced are in: there are schools that meet their obligations to their students; there are students who meet their obligations to themselves and their schools. Magnet schools are delivering: they should be a source of inspiration to the rest of the nation.

CONCLUSION Magnet schools are not a panacea, any more than comprehensive schools were. They are, however, a powerful tool for education change. They can and do meet the objectives set for them, including twin measure of higher standards and greater integration. In the early 1980s such results can only be described as remarkable. They offer a hopeful sign of great promise. They work in large part because they embody two ingredients necessary

to the educational process: choice and commitment. Based on the fact that schools have effects, they are designed to maximize the effects of strategic variables.

It is not surprising that high standards, commitment, hard work, and the flexibility to counsel students in and out of a magnet program should produce improved learning, high morale, and sense of community in a particular school. There is now sufficient evidence to support the establishment of such special schools to educate students committed to study and preparation in the fields of science and mathematics.

The more difficult question, and that for which we have little evidence available, is what potential the creation of selective schools or non-selective magnet schools may have for the improvement of math/science education system-wide. Although (to our knowledge) no systematic study has addressed this question directly, the following lessons may be gleaned from what we do know about existing magnet schools and about change in education.

First, individual schools represent the appropriate locus for change in education. Magnet schools--selective and non-selective, are built on the manipulation of key variables in the education process: student body, curriculum, faculty, leadership. Some school system problems can be more realistically addressed by creating islands of excellence in manageable units than by attempting broad system-wide changes. When multiplied, they have the promise of building to a critical mass.

Second, magnet schools in science and mathematics can serve as laboratory schools for the development of curricula, teacher inservice, piloting materials, and developing instructional strategies for

dissemination to the wider system. In order for this to happen, however, special attention must be paid to development of linkages to other schools. New ways for sharing resources and linking faculties have to be created. The connections will not occur automatically; they must be developed and implemented.

Third, the story of magnet schools--historical and contemporary--focuses on the important role external influences have played in their development. Most prominently, universities and industry have been significantly involved in the planning, design and implementation of magnet schools. One example of that role will illustrate the specific importance of such collaboration. The Houston Independent School District (HISD) science/math magnet schools program was motivated by the Chatham Report of the early 1970s. Published by CEOs of major corporations, it identified two key problems: one, an insufficient number of engineers overall, and two, the low representation of women and minorities in both practice and training. Out of this was born the Minorities in Engineering Program with operations on the national, regional, and state levels. Regionally, the Gulf Coast Action Committee for Minorities in Engineering has sponsored a corporate adopt-a-school project at the junior high schools level to motivate students and prepare them for more demanding work in math and science.

Recognizing the need to begin preparation as early as possible, HISD has five elementary level magnet schools which focus on math and science. Admission is by interest, students need not demonstrate extraordinary aptitudes. The centerpiece, however, in the HISD science/math magnet program is the High School for Engineering

Professions. The school opened in 1975 after one year of planning in close collaboration with both the higher education and the business communities. THe curriculum guidelines were established by the deans of engineering schools; industry provided both equipment and personnel in the initial start-up phase and continues to provide financial support on an annual basis. The school provides an annual report to its industrial partners. The report provides information on how the resources were distributed and what is happening to the students. The reports to date are, to say the least, impressive. As of 1981, one hundred percent of its graduates have gone to college--including the top-ranking institutions for engineering such as MIT, RPI, Rice, Cornell, and Princeton Universities.

The example of the Houston magnet schools is important because it illustrates the significant, substantive role industry and higher education can play in improving the relevance and quality of public school education and at the same time improve equality of access. Magnet schools, viewed as a strategy for the achievement of excellence and equity, suggest a federal role of some consequence.

Liberals and conservatives alike are persuaded that the nation's public schools are in distress; as well, they are persuaded that some modest federal role in education is desirable and appropriate.

The magnet school story suggests two things--one, an elaboration on existing activities, and two, a new program altogether. First, what we now know about magnet schools--beyond anecdote and story--is a product of federally funded research. The importance of this cannot be overemphasized. No other unit of government has the financial or

organizational capacity--or incentive--to conduct research of national scope with national implications.

Too often policy is made on the basis of opinion, only casually informed by fact. And while social science research will never have the precision and focus of the natural sciences, thoughtful analysis with a solid evidentiary base improves the decision-making process. So it is with magnet schools. More research remains to be done; similarly there is a development and demonstration task, just as there is a dissemination task. There is a continuing role for the federal government to play in this area.

Second, the federal government could also play a significant role in helping localities think through magnet school design and implementation questions: to do so requires a combination of federal money and local interest. A straightforward program of federal matching grants for planning and implementation could be designed, providing support for a finite number of communities.

For example, a program deliberately modeled on one major American success story could be designed today, at low cost, low risk, and with the high probability of substantial payoff. That would be a federally funded magnet school demonstration program building on the tradition of the Land Grant Colleges.

The strength of the land grant model is more than the establishment of a set of schools; it is in its ability to lay the groundwork for an intricate system of applied research facilities or laboratories for science-math education, and of training institutions for teachers and curriculum developers with demonstration and dissemination capabilities reaching down to the local level throughout the nation. The

land grant model is fundamentally a decentralized system, with funding and control shared among the federal government, the states, and the private sector. Its effectiveness for improving science and mathematics education is in its ability to combine research capabilities with education, demonstration, and innovation, and to draw on the appropriate levels of government, private sector, and universities for maximum effectiveness.

The land grant agricultural research and dissemination model created a population of innovative American farmers receptive to change rather than fearful of it. Meeting the needs of the cadre of America's teachers and students for scientific and technical education presents a parallel set of challenges and opportunities.

Federal seed money at a critical juncture point could be catalytic. The preliminary cost information emerging from the Lowry study of magnet schools indicates that federal grants on the order of one hundred thousand dollars per school provide enough in the way of marginal resources to successfully undertake the necessary preplanning, planning and implementation to get a magnet school underway. Clearly this amount is not enough to do more than leverage local resources, but that is precisely the right strategy to employ in the creation of a reform program which requires local "ownership" to succeed.

At such a modest level of individual building funding, it is possible to conceive of a national program with great reach. Because magnet schools are particularly well suited to urban areas, the most promising way to begin would to provide funding for three magnet schools in each Standard Metropolitan Statistical Area. Three magnet

school in each area would permit the community to simultaneously launch several thematic schools. The obvious first candidates would be a math-science magnet school, a humanities magnet school and an art-performing arts magnet school. The final decision should, however, be left to the individual community which is the only level of organization which has a clear sense of the opportunities and problems unique to it.

Politically, such an approach should have broad appeal, reaching the majority of the nation's congressional districts and a substantial majority of the nation's population. In 1980, for example there were 318 SMSA's with a total population of 169 million people, 74.6% of the nation's population of 227 million. Because of logistical and transportation problems day magnet schools are not well suited to rural areas, but a program for one or several magnet boarding schools, modeled on the North Carolina School of Science and Mathematics could be included. To take this possibility into account, funds for each state to explore non-metropolitan magnet schools could be made available on a formula basis.

One of the most appealing aspects of such a program is the opportunity inherent in it to avoid old and acrimonious disputes about school boundaries and zones of attendance. Magnet schools designed to serve SMSA's or even larger regions would by their nature cross old boundaries, and should involve the various school districts and local governments in the magnets school's service area.

From the standpoint of the federal government, a magnet school demonstration program of this type would be time limited: it would not involve long term operational funding, but would provide the

Endnotes

1 By almost any definition except "tuition", many private schools are magnet schools. Although Catholic and other religious elementary schools frequently are organized by neighborhood, most private high schools serve regions. The oldest and most prestigious-- St. Paul's and Exeter, for example--serve the nation. Closer to home, most Catholic order schools serve metropolitan regions, and frequently their student bodies include large numbers of non-Catholics. Most non-Catholic day and boarding schools serve regions as well.

Although private schools fall outside the scope of this essay, it is clear that they represent a rich analytic vein for the researcher who is interested in questions of choice and diversity, particularly pedagogical and curricular diversity.

For a more complete analysis of private schools and the social and pedagogical role they play see Denis P. Doyle, "A Din of Inequity: Private School Reconsidered", Teachers College Record, Vol 82, No. 4 (Summer 1981): 661-674.

2 David Tyack, The One Best System: A History of American Urban Education, Harvard University Press, Cambridge Mass., 1974.

3 James B. Conant The American High School Today, McGraw-Hill, New York, 1963.

4 The material on New York's selective schools is based on site visits by one of the co-authors, Denis Doyle, in May 1983, interviews with the principals and senior staff, and a random selection of interviews with teachers and students, and printed material prepared by the schools themselves.

5 Fred Hechinger, "About Education: Debate on the Role of Elite Schools", New York Times, February 5, 1982.

6 Hechinger, Ibid

7 Hechinger, Ibid.

8 Albert O. Hirschman, Exit, Voice and Loyalty: Response to Decline in Firms, Organizations and States, Harvard University Press, Cambridge, Mass., 1970.

9 Theodore Sizer, "High School Reform: The Need for Engineering", The Phi Delta Kappan, June 1983.

10 The U.S. Department of Education Office of Program Evaluation funded a major study of magnet schools which began in October 1981. The prime contractor is James H. Lowry & Associates of Washington,D.C.. The subcontractor is Abt Associates of Cambridge, Massachusetts (USOE contract no. 300-81-0420).

It is the first comprehensive study of magnet schools in the nation and incorporates both ESAA magnets and non-ESAA magnets. Much

critical resource mass to permit local authorities to initiate programs that would serve their own best interests, but for which they have no resources.

With more than two decades of federally funded research behind us, one thing we now know with some confidence. Reform and change can be stimulated by federal programs, but they will not "take" unless they are appropriated by the local community. The business of schooling goes on in the classroom and school building: it is part of a mysterious interaction of teacher and taught, the schools and its community. But that process can be strengthened by a thoughtful and carefully crafted federal role.

The class of the year 2001 was born this year, and as we look to the twenty-first century we are struck by a remarkable spectacle: unless we initiate major changes today, we will perpetuate an education system designed for the covered wagon in the space age. Magnet schools offer a strategy of low-cost, high-visibility, incremental change that can transform American education.

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of the material in this report is drawn form Survey of Magnet Schools, Interim Report, September 30, 1982. the only published document to date, and extensive oral briefings and preliminary material in draft form received over the past year and one-half.

Phase I of the study was completed in September 1982. It included design research and data collection activities in six pilot districts.

Phase II is nearly completed, and the final report is scheduled for release in September 1983. The preliminary findings were presented to the project advisory panel for their review and comment June 2, 1983, in Washington, D.C. The findings were based on site work in fifteen school districts in five regions (Northeast, Southwest, Midwest, Southeast, and West). The total number of magnet schools in the fifteen districts is 190. Districts were selected with a wide variety of enrollments. Smallest was a midwest district of six thousand students. Largest was a West Coast district of 115,000 students.

The preliminary findings, which will not change (except for stress of emphasis), are reported from oral briefings and preliminary working documents which are not yet available for formal citation. They are now in the hands of readers and the Advisory Panel, a group of "experts on public education, desegregation, and magnets schools from across the country" who have "guided the study staff toward addressing the right questions..." The panel membership includes:

Dr. Beatriz Arias
Professor
School of Education
Stanford University

Dr. Mary E. Busch
Member, Indianapolis Board of School Commissioners
and
Director of Community Services
Indiana Central University

Dr. Emeral A. Crosby
Principal
Northern High School
Detroit Public Schools

Mr. Denis P. Doyle
Director of Education Policy Studies
American Enterprise Institute for Public Policy Research

Dr. Robert Green
Dean
College of Urban Development
Michigan State University

Dr. Dennis R. Lubeck
Teacher
University City High School
University City, Missouri

Mr. Dan W. Merenda
Deputy Director
National School Volunteer Program, Inc.

Dr. Charles V. Willie
Professor of Education and Urban Studies
Harvard Graduate School of Education
Harvard University

11 For a more complete statement of the recent "school effects work" see particularly Barbara Lerner,"American Education: How Are We Doing?", The Public Interest, no. 69, Fall 1982, Denis P. Doyle in Teaching Political Science, forthcoming, review of High School Achievement: Public, Catholic, and Private Schools Compared, James Coleman, et al. Andrew Greeley, Catholic High Schools and Minority Students, (New Brunswick, N.J.: Transaction Books, 1982), and Michael Rutter et al, Fifteen Thousand Hours: Secondary Schools and Their Effects on Children (Cambridge, Mass: Harvard University Press, 1979).

12 The Gallup organization has been conduction annual polls of attitudes toward public education for thirteen years; the results appear in the September issue of the Phi Delta Kappan each fall. The first ten are reprinted in book form, The Gallup Polls of Attitudes Toward Education, 1969-1978, Phi Delta Kappa, Bloomington, Indiana.

A standard question asked each year is, "what grade would you give the public schools...A, B, C, D, or Fail?" Commenting on this question, David Breneman of the Brookings Institution observed that "over time,the surveys report a steady drop in public regard for the schools. In 1974, 18 percent of those surveyed gave the schools a rating of A; by 1978 this figure had dropped to 9 percent. At the other end of the scale, 11 percent gave the schools a D or Fail rating in 1974, while 19 percent did so in 1978. Elaborating on the 1978 survey, the authors note that; 'Attitudes are far more favorable in the smaller cities and towns than in the larger cities. In fact, residents of the central cities give their schools the lowest ratings in the nation...Of all groups, blacks living in the North give their public schools the lowest rating.'" See Joseph A Pechman, ed., Setting National Priorities: Agenda for the 80s (Washington, D.C.: The Brookings Institution, 1980), p. 209.

APPENDIX

The Emergency School Aid Act (ESAA), Title VI of the Elementary and Secondary Education Act, became law in June of 1972. The legislation was to provide financial assistance "(1) to meet the special needs incident to the elimination of minority group segregation and discrimination among student and faculty inelementary and secondary schools; (2) to encourage the voluntary elimination, reduction, or prevention of minority group isolation in elementary and secondary schools with substantial proportions of minority group students; and (2) to aid children in overcoming the educational disadvantages of minority group isolation." (P.L. 92-318, Sec. 702(b)).

The legislation was based on the assumption, since shown to be true, that minority segregation in the schools is associated with educational disadvantages.[1] The ESAA was an attempt to encourage the elimination of these disadvantages through desegregation plans. The Educational Amendments of 1978 deleted the third purpose of the original ESAA from the legislation. (P.L. 95-561).

Following the 1978 Amendments, the ESAA program consisted of six subprograms. Five were nationally competitive programs, and one was a state apportionment program. The nationally competitive subprograms were special project awards (including Emergency Special Project out-of-cycle awards), Magnet School grants, Nonprofit Organization grants, Educational Television and Radio contracts, and Evaluation (of ESAA programs) contracts. The Basic Grants program was the state apportionment component of the ESAA.

All of the above programs were designed to aid school districts, financially, implementing or developing voluntary or required

desegregation plans. Applications for ESAA funds were made directly to the Department of Education in Washington, and the Office of Civil Rights determined whether a desegregation plan was eligible for funding.

The Basic Grants component was the largest subprogram of the ESAA. In FY 1981 53% of the 515 applicants for Basic Grants were funded a total of $92,369,000. This made up 63% of the total ESAA funding for that year. These funds were allocated to states according to a formula which compared the ratio of minority to majority school-aged children among the applicants to those of other states.

Any state which was implementing or developing a required or non-required desegregation plan was eligible to receive funding through the Basic Grants program. In addition, all applicants for ESAA funding had to assure the federal government that they were not reducing local support of public education below that of previous years, and that they were currently spending as much per pupil from local sources as they had in the past. Basic Grant monies could be used for any activity which helped the Local Education Agency (LEA) meet the educational needs of an eligible desegregation plan.

In terms of funding, the second largest subprogram was magnet schools. To be eligible for ESAA funding, magnet schools had to have a special curriculum which was designed to attract students of varied racial backgrounds. In FY 1981, 64% of the 107 applicants for magnet school funds received a total of $30,000,000. This was 20% of the ESAA funding for that year. In the same year special projects grants made up 12% of the ESAA budget and nonprofit organization, educational

television and radio, and evaluation contracts received 4%, 2%, andless than 1% of the total ESAA budget, respectively.

The nationally competitive programs had the same eligibility standards and application process as the Basic Grants program. However, the applicants were ranked nationally instead of within each state.

In August of 1981 the ESAA was repealed. The final year of funding under the ESAA was the 1981-82 school year. At the same time that the ESAA was repealed, Chapter 2 of the Education Consolidation and Improvement Act was enacted. Funds are now available under these programs for use by LEAs requiring financial assistance in developing and implementing desegregation plans.[2]

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1 Coulson, John E., et al. The First Year of Emergency School Aid Act (ESAA) Implementation. Santa Monica, California: System Development Corporation, September 15, 1975, p. xi.

2 Ferrara, Lynette, et al. Emergency School Aid Act (ESAA): A Federal Program to Meet Desegregation Related Needs, Draft; Washington, D.C.: Decision Resources, August 1982, p. xiii.

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